WIPP RESPONSES

to the

Advanced Accelerator Applications (AAA) Scoping Analysis/Field Data Request

received from

W. D. Magwood, IV, March 9, 2001

Carlsbad, April 5, 2001

The AAA program is gathering scoping data on sites with available space measuring approximately 2500-feet by 5000-feet, plus a one-mile exclusion/security buffer in all directions. This space, including reliable electrical power and cooling water must be available for 40 years without interfering with approved site missions.

Please answer the questions using separate sheets and supporting documentation.

1. *Could your site accommodate the project envelope described above? How many location options can your site provide? Please include substantiating information that demonstrates site suitability, including site map(s) depicting any facility envelope and buffer options in context to existing land uses, site topography and other facilities. If your site cannot accommodate such a project envelope, please explain why not.*

The WIPP site, meaning the WIPP Land Withdrawal Area (WLWA), can accommodate the project envelope and peripherals in a variety of potential configurations. It is located on the High Plains of the Chihuahua Desert. The land is flat and sparsely vegetated. Congress specifically acknowledged the potential use of the WLWA for other purposes besides waste isolation. Section 4(b)(3) of the WIPP Land Withdrawal Act (Public Law 102-579) allows "such non-WIPP related uses of the Withdrawal as the Secretary determines to be appropriate." In keeping with this congressional directive, the DOE seeks to make maximum use of existing WIPP facilities to further the scientific missions assigned to the Department by Congress to the extent it can do so without impacting the primary mission of the WIPP: the disposal of defense TRU waste. This multiple use of the WIPP facility would benefit the public by providing an additional return on the existing investment in that facility.

The WLWA encompasses 16 sections or 10,240 acres of federal land in Township 22 South, Range 31 East. The area containing most of the WIPP surface structures (Property Protection Area) covers only about 35 acres and is enclosed with a chain link fence. Surrounding this inner area is the Exclusive Use Area, marked by a barbed-wire fence. Encompassing these areas is the Off-Limits Area, which is not fenced, to allow livestock grazing but, like the other two, is patrolled and posted against trespass or other land uses. Beyond the "Off-Limits Area," but within the 16-section WIPP site, the land is managed under the public land use concept of multiple use. Support structures outside the chain link fence include sewage stabilization ponds, auxiliary buildings, two tailing piles, and retention basins to manage site run-off.

The scoping requirements for a surface area of 2500' x 5000' plus a one-mile exclusion/buffer in all directions can be accommodated, if the buffer/exclusion area may include part (or all) of the WIPP infrastructure, groundwater monitoring wells, access roads, high

pressure pipelines, or any combination thereof. If that is acceptable, then the WLWA can easily provide adequate real estate.

An accelerator and associated facilities on the WLWA might be located in such a way that suitable structures could become part of the permanent marker system for the underlying waste repository.

Attachments 1-3 (site and vicinity maps) show topography and land uses at and near the WIPP.

Attachment 4 consists of the cover for the WIPP Land Management Plan (DOE/WIPP 93-004) and Figures 5.1, 7.1, 8.1, 10.1, and 13.1 from that report. They show grazing allotments, oil and gas wells, access and rights of way, security zones, and roads and well pads.

2. *What is your site's present electrical capacity?*

The WIPP is currently authorized to use up to 20 MW of power, though it actually uses only 3 to 4 MW. This power level has been authorized by a load-flow study. The current maximum transmission-deliverable power over existing lines is estimated at 60 MW or more. A load flow study is required to confirm that.

How would your site meet requirements for electrical power at a minimum of 60 MW and a maximum of 350 MW?

The existing system might accommodate a load of 60 MW, but loads greater than 20 MW will only be authorized after a load-flow study. An upgrade to 60 MW should present no problem. An upgrade to 350 MW will require a new transmission line and a voltage upgrade from 115 kV to 220 kV. Such an upgrade should not present an insurmountable challenge.

At 60 MW, the existing WIPP substation may be used to supply the new facility. The existing WIPP substation consists of a ring bus with five 115 kV SF6 breaker positions. Only four of the SF6 breakers are currently installed. Bus space is available which will allow a facility to be powered off the existing 115 kV ring bus.

What upgrades will be required?

Additional power capabilities could be added by constructing a single 239kV transmission line from Potash Junction and a new single-ended 239kV substation.

Would you anticipate regulatory impediments to upgrading your site power availability?

The majority of right of way would be across Bureau of Land Management (BLM) land and access should not be an issue. Other regulatory requirements include correct spacing of the transmission line for raptor protection, and archeological site preservation if a site should be encountered. None of these should be an impediment.

The BLM, working in coordination with the CBFO, will be required to complete an Environmental Assessment for the expansion of the 239 kV transmission line from Potash Junction to the WIPP. Because the new

transmission line will be located along the right-of-way from the two existing 115 kV power lines, very minimal environmental impacts are anticipated. The BLM has experience with power line NEPA documents and historically has completed the NEPA process within 6 months.

What is the present cost of electrical power?

The WIPP currently has demand charges as follows:

4000kW baseline transmission charges ($24,120/mo) and an additional $5.88 per kW for addition demand per month.

4000kW baseline backbone charges (base tariff rate for 115kV transmission at $23,520/mo) and an additional $5.73 per kW for all additional demand per month.

Energy charges are 2.225 cents per kWh.

The power factor charge is $0.25 per kVAR that numerically exceeds 0.53 times the measured kW demand, and is reduced by $0.25 per kVAR that is numerically less than 0.40 times the measured kW demand.

3. *How close are major high-voltage lines to the site? Is additional power available for purchase and if so at what price?*

The WIPP site currently receives power from two independent 115kV transmission lines. These two lines extend from Potash Junction to the north for a distance of approximately eight to ten miles, and to the south east approximately 20 miles to the Whitten/Jal loop.

The major source of increased power would be supplied from a 345kV transmission line. This line extends from the Amarillo area in Texas to Eddy County interchange located just east of Artesia, New Mexico, which is approximately 40 miles north of the WIPP site. From this interchange a 230kV-transmission line runs to Potash Junction. Potash Junction is approximately 8 to 10 miles north of the WIPP site.

The 345kV transmission line located east of Artesia is one of the main transmission lines between the utilities' main generating plants in east Texas and west Texas, New Mexico, and Arizona. Power is transmitted directly from the utilities main generating plants in the Amarillo to the Eddy County Interchange. While it appears that sufficient power could be available, a load-flow and transmission study needs to confirm that fact.

Assuming power is available and could be delivered with a 230kV transmission line run from Potash Junction and a substation upgrade, the associated costs could be anywhere from $3,000K to $4,000K.
A comparison with the cost of the current WIPP transmission line and of a transformer close to the required size, recently purchased by the utility, yields an estimate of $100K per mile for the transmission line (not including right of way) and $1,500K for the transformer.

The utility (Southwestern Pubic Service) will help with the cost of the installation with a "Contribution in Aid to Construction". This applies only for a single-source supply (no redundancy). To calculate the construction aid amount, the annual expected revenue paid to the utility for power usage is multiplied by 1.8. Any construction costs over this amount will be payable to the contract.

4. *How would your site provide cooling water sufficient to reject 300 MW of heat? Is there sufficient cooling water available that could be dedicated to new projects?*

The maximum water consumption for a conventional cooling system could be as high as 5000 gallons per minute during the warmest weather. Actual cooling water needs depend on specific design features and might be lower.

When running at full capacity, a nearby gas-fired 194 MW power-generating site (Maddox Station) uses approximately 4500 gpm of make-up water during the summer months. This water is stored in a facility holding about a million gallons of water. The utility uses 28 water wells spread throughout eastern NM to deliver the quantity of water needed.

A 10-inch pipeline supplies potable water to the WIPP site and is technically capable of delivering up to about 1,000 gpm.

Contacts with one neighboring potash mine indicate the availability of up to 3,500 gpm of water for sale. Similar contacts with another potash producer indicate no availability of water from their sources. Current market rates for available water range from 25 to 35 cents per 42 gallon barrel.

5. *What major highways are suitable for safe transport of hazardous materials and personnel?*

Four-lane U.S. Highway 62/180 (from Carlsbad to Hobbs) passes about 13 miles north of the WIPP site. The North Access Road connects US 62/180 to the site. It consists of two 12-foot wide driving lanes with two 8-foot shoulders, built to carry standard truck traffic at speeds up to 70 mph. This is the designated access to the WIPP for trucks loaded with radioactive and mixed waste.

Distances to the nearest Interstate Highway junctions are Pecos, TX, about 85 miles southeast of Carlsbad (I-20), Fort Stockton, TX, about 140 miles southeast of Carlsbad (I-10), Clines Corner, NM, about 215 miles north of Carlsbad (I-40), and Lamy, NM, about 265 miles north of Carlsbad (I-25).

6. *How far from each potential site is the nearest commercial airport?*

Cavern City Air Terminal, Carlsbad, served by Mesa Airlines with service to Albuquerque: about 28 miles west of the WIPP site. Once a military airfield, this airport regularly accommodates corporate jets (Lear and Gulfstream) as well as mid-sized chartered jets (DC-9, B-737).

Lea County Regional Airport, Hobbs, served by Mesa and Big Sky Airlines with service to Albuquerque and Dallas: about 47 miles east of the WIPP site.

Midland International Airport, served by American, Continental, and Southwest Airlines: about 120 miles southeast of the WIPP site.

El Paso International Airport, served by America West, American, Continental, Delta, Frontier, and Southwest Airlines: about 155 miles southwest of Carlsbad.

Lubbock International Airport, served by American, Continental, Delta, and Southwest Airlines: about 180 miles northeast of Carlsbad.

7. *How far from each potential site are actively used railroad tracks and spurs?*

A single-track railroad spur into the WIPP site connects to the Burlington Northern and Santa Fe system and is designed to carry railroad cars with a gross weight of up to 263,000 lb. The track has been mostly idle since construction in 1984.

8. *What is the capacity of the site infrastructure to accommodate additional staff during the next 40 years? What upgrades are planned or would be needed to serve the existing site population plus new mission requirements?*

The proposed project would be independent of the WIPP, but the WLWA contains more than enough unimproved land to accommodate it. The WIPP itself has no unused or underused facilities. The proposed project would therefore need to develop its own infrastructure. WIPP participants would lend support to the extent such effort is compatible with their primary duties and consistent with DOE directives.

The WIPP Disposal Phase Final Supplemental Environmental Impact Statement (SEIS-II) evaluated a number of alternatives with socioeconomic impacts much larger in scope than the impacts of the selected alternative (treatment and characterization at the generators sites and disposal of TRU wastes at WIPP). This socioeconomic assessment evaluated the potential impacts of a facility to thermally treat waste from the entire DOE complex at WIPP. It examined the impact on the WIPP region involving the direct employment of 1,095 additional people and an indirect (temporary construction) workforce of 2,443 over a 35-year period.

The results of the socioeconomic assessment are contained in Chapter 5 of the SEIS-II and are summarized in Table 5.3. These assessments indicate that the thermal treatment proposed action was not expected to result in the additional use of government-provided goods or services (schools, police, fire protection, and health protection), nor should it require major capital investments in public infrastructure within the WIPP region of impact. The SEIS-II goes on to state that the proposed action is not expected to impact the local real estate market or result in major changes to the work force population.

9. *Does your site have a proton accelerator and/or reactor, or facilities that could be adaptively reused to house a subcritical reactor? Please describe these facilities.*

No.

10. *Are there tritium facilities and/or existing tritium-related infrastructure at your site?*

No.

11. *What support and/or process facilities exist at your site that would support work with transuranic materials?*

Radiation safety professionals support permanent disposal of transuranic wastes at the WIPP site. The project has a radiological staff consisting of DOE-qualified radiological control technicians, radiological engineers, and radiation safety management. The WIPP radiation safety program provides survey capabilities for transuranic isotopes as well as neutrons and fission and activation products, which can be in the waste. The WIPP is currently preparing for startup of the remote-handled waste system (wastes with dose rates up to 1,000 rad/hour) and for waste characterization, which will include glovebox operations.

The WIPP has internal and external personnel monitoring capabilities for transuranics, as well as beta/gamma bioassay analytical capabilities. The DOE Laboratory Accreditation Program (recommended for in-vitro analyses) has accredited the WIPP's internal and external dosimetry functions. The external dosimetry program provides beta-gamma dose determinations and is accredited in both neutron categories.

See also the answer to Question 22.

12. *Are there research institutions either on-site (such as a national laboratory) or nearby (such as a university) that would or could support or complement nuclear technology research?*

Sandia National Laboratories and Los Alamos National Laboratory are active WIPP participants. The Carlsbad Environmental Monitoring and Research Center (www.cemrc.org), part of New Mexico State University (NMSU), has radio-analytical and internal dosimetry capabilities.

The NMSU physics department has recently proposed to establish a new degree program, leading to a bachelor of physics engineering (BPE) degree. Graduates would have the combination of fundamental understanding and flexible problem solving skills of physicists and the practical skills of engineers, which are particularly useful to high-tech companies and research institutions.

13. *Have the location options at your site (discussed in Question #1) been completely or partially characterized for environmental considerations, natural and operational hazards? Do the location options have threatened or endangered species or habitat, wetlands, floodplains, historical or cultural resources that may require mitigation if new activities were initiated there?*

Information contained in the WIPP's SEIS II (DOE/EIS-0026-S-2) asserts, with supporting data, that no threatened or endangered (T&E) species occupy the WLWA. Environmental considerations, however, must include the unusually large number of state and federal protected species (non T&E) that do occupy the WLWA. These consist, predominantly, of migratory birds (mostly neotropical species). The WLWA is within the area identified by the BLM as habitat conducive for the presence of candidates for T&E designation.

The WLWA contains a significant and diverse inventory of prehistoric features. Approximately 37 percent of the WLWA have been inventoried for cultural resources resulting in one site for every 65 acres surveyed. Assuming environmental homogeneity in site distribution, the WLWA could feasibly contain as many as 99 sites. Of the sites that have been discovered, fourteen (within the WLWA) are considered as eligible for inclusion in the National Register of Historic Places (NRHP).

Measures for ensuring the protection of known archaeological and historic resources, or others that may be inadvertently discovered during ground-disturbing activities, are discussed in the *Waste Isolation Pilot Plant Land Management Plan* (DOE/WIPP 93-004). These measures include identifying, inventorying, evaluating, and treating cultural resources under the National Historic Preservation Act of 1966. DOE would avoid, to the maximum extent possible, sites found eligible for inclusion on the NRHP. Where avoidance is not possible, mitigation measures would be developed under the Joint Powers Agreement with the State of New Mexico.

The WLWA encompasses no wetlands or floodplains.

14. *Does the site presently have any Category I or II nuclear facilities?*

Under the approved WIPP Safety Analysis Report, the facilities for handling contact-handled TRU waste are designated as Category II nuclear facilities. Facilities for handling remote-handled TRU waste are expected to carry the same designation.

15. *Has site atmospheric dispersion been characterized for your site and is the meteorological data available?*

The WIPP site's atmospheric dispersion has been characterized, and the meteorological data are available (Report "WIPP Site Atmospheric Dispersion Coefficient (X/Q) Calculations" dated March 27, 2000).

<u>Attachment 5</u> consists of the referenced report without enclosures and appendices.

16. *What are the Natural Phenomenon Hazard (NPH) conditions (e.g. seismic levels and spectra, flooding conditions, and high winds tornadoes and hurricanes) at your site for a Category I nuclear facility?*

The WIPP was initially categorized, according to the NRC guidelines for independent spent fuel storage installations, as a low hazard non-reactor nuclear facility, presenting minor on-site and negligible off-site impact to people or the environment. Site-specific seismological and tornado studies were performed and design criteria established. However, the final design was done under a quality assurance program, used a dynamic design approach, and received an independent peer review. For this reason, the WIPP design meets the requirements for moderate hazard facilities.

It was postulated that a flood is beyond a credible hazard (the closest river is 15 miles from the site); no design parameters were developed. Establishing a missile hazard was initially attempted, but later abandoned as highly unlikely.

According to the present DOE Order 420.1, Facility Safety, and associated standards, the WIPP falls into the Hazard Category (HC) 2, (based on unmitigated release) and correlated Performance Category (PC) 2.

The 1990 Final Safety Analysis Report (FSAR) provides a wealth of information on the research of regional geology, tectonics, seismicity, soil attenuation, calculation of risk curves, and spectra.

The design basis earthquake is a free-field horizontal and vertical ground acceleration of 0.1g, based on a 1,000-year recurrence interval.

The design basis tornado assumes highest winds of 183 mph and is based on a 1,000,000 year recurrence interval.

If a reactor facility is built in a vicinity of the present WIPP site, a new design basis needs to be developed. The reactor will likely be Hazard Category 1 and Performance Category 4.

Development of the design basis earthquake could, to some extent, use existing information, but the risk curves and ground acceleration will be new. The design basis tornado will probably satisfy the requirements even for a reactor facility.

17. *Describe your site security.*

The WIPP security force consists of a small number of <u>unarmed</u>, uniformed, "L" cleared, contractor <u>security</u> <u>officers</u> supported by an equally small staff. The site consists of 16 square sections (unfenced), which surrounds a centralized, fenced property protection area (PPA) of approximately 30 acres, patrolled 24 hours per day both by vehicle and on foot. The force provides personnel access and property control at one main portal to the PPA. Security is augmented by a camera surveillance system, but there is no intrusion detection system installed at the site. Local law enforcement officials provide armed response and law enforcement services as necessary.

Does the site offer the security needed for special nuclear materials?

No. The WIPP security force, in its current configuration, does not have the ability to contain an incident involving theft, sabotage, or unauthorized control of Special Nuclear Materials(SNM):

1. **An unarmed force cannot respond to an incident involving armed, hostile adversaries.**
2. **There are insufficient numbers of security force personnel to counter a *Design Basis Threat* scenario involving SNM.**
3. **"L" cleared security officers cannot take control of SNM in categories I & II.**

Would the presence of foreign nationals and uncleared U.S citizens interfere with your other site missions?

No. Security plans are required to be completed and submitted to the Department of Energy for approval prior to the granting of access to any foreign national visitor or assignee. Additional personnel resources might be necessary to allow for an increased workload in the foreign visits and assignments office.

18. *Do nearby facilities and operations either at the site or surrounding non-DOE lands present land use conflicts or potential hazards? Describe the nature and proximity of manmade hazards such as airports, dams, transportation routes, military, chemical and nuclear facilities).*

Use conflicts and potential hazards are minimal. The proposed facility may have to be reconciled with some land use in the surrounding area, most notably grazing allotments and oil and gas exploration, production, and development. In addition, potash reserves and leases may be affected.

Potash mines and processing plants, and oil and gas exploration and production facilities, are the only manifestations of nearby chemical/industrial activities. All associated surface facilities are outside the WLWA.

The nearest federal highway is 10 miles north, and the nearest airport and dam are more than 20 miles away.

19. *What are the site operational thresholds for air emissions and waste streams (per site EIS)? If needed, how long would it take to modify existing permits or acquire new permits (e.g. RCRA, NPDES, CAA/NESHAP, etc) at your site?*

The WIPP is an attainment area for criteria pollutants. Specific air impacts associated with the WIPP are described in Chapter 5 of the SEIS–II.

The site has the following permits and operational thresholds:

- **New Mexico Environment Department (NMED) Air Quality Permit for two back-up diesel generators. Operation limited to 480 hours per year. No CAA Title V Permit required.**

- **NMED Discharge Permit for waste water lagoon facility. Limited to 23,000 gallons per day (gpd) domestic wastewater, 2,000 gpd miscellaneous non-hazardous water, and 8,000 gpd miscellaneous non-hazardous brine and water.**

- **NMED Hazardous Waste Facility Permit – governs the handling, storage, and disposal of mixed transuranic waste at the WIPP. If modifications were needed, time would vary depending upon the type of modification. Minor modifications may be implemented immediately, while more significant modifications may take up to over a year.**

- **NESHAPs – no permit or notifications are required. Annual periodic confirmatory radionuclide emission report to EPA per NESHAPs for DOE facilities (40 CFR 61, Subpart H).**

- **No NPDES standard permit required. No point source discharge to waters of the U.S.**

- **NPDES storm water permit would be required for construction activities greater than five acres. Approximately three to six months lead time to develop storm water pollution plan and best management practices. Permit can then be obtained in a matter of days.**

- **No Safe Drinking Water Act compliance issues.**

Permit modification for the discharge permit would require at a minimum 18 months to two years. NMED requires 120 days for review and approval cycle.

CAA Title V permit may be required for operation. Approximately 6 months to complete preliminary material mass balance for estimate of emissions and to determine applicability of Title V Permit requirements. Eighteen months to two years if stack testing is also required.

NMED Air Quality permit may also be required. Lead time 18 months to two years depending on state regulatory thresholds.

Various and sundry minor permits for underground storage tanks, rights-of-way, monitoring wells, etc.

20. *Is the site in or near an existing Class I area designated under the Clean Air Act?*

No. The nearest Class I area designated under the Clean Air Act is Carlsbad Caverns National Park, which is approximately 65 kilometers (40 miles) west of the WIPP. The Guadalupe Mountains National Park is 110 kilometers (68 miles) southwest of the WIPP.

21. *Is the site located on or near an existing Class I ground water aquifer?*

No, the WIPP site is not located on or near an existing Class I ground water aquifer. As presented in the WIPP 1999 Site Environmental Report (DOE/WIPP 00-2225), the two principal water-bearing units above the WIPP horizon are the Culebra member of the Rustler Formation and the Dewey Lake Formation. The quality of the Culebra water near the WIPP is naturally poor and not suitable for human consumption or agriculture. Total dissolved solids (TDS) concentrations measured in the Culebra range from fewer than 10,000 to 280,000 mg/L. The ground water of the Culebra is considered to be Class III water by EPA guidelines.

Water quality measurements performed in the Dewey Lake Formation indicate that those waters are of considerably better quality than the Culebra water. TDS values are below 10,000 mg/L. The water is suitable for livestock consumption, and is classified as Class II water according to EPA guidelines. Saturation of the Dewey Lake Formation in the area of the WIPP is discontinuous.

What are the depths to the aquifers at your site?

The principal water-bearing units are the Culebra Dolomite member of the Rustler Formation and the Dewey Lake Red Bed Formation. The Culebra is a laminated to thinly bedded locally argillaceous dolomite with abundant open and gypsum filled fractures and vugs. The Culebra ranges from 22 to 37 feet in thickness, while the beds dip to the east-northeast at about 70 feet-per-mile. The top of the Culebra at the WIPP site is located at a depth of about 700 feet below land surface.

The Dewey Lake redbeds consist of clastic sedimentary rocks ranging in thickness from approximately 200 to 500 feet on the WIPP site. At the WIPP, the Dewey Lake is approximately 476 feet thick. The Dewey Lake can be divided into two units. The lower 20% consist mostly of siltstones and mudstones while the upper 80% consist of thinly laminated to cross-laminated sandstones and siltstones. Abundant fractures are found throughout both units. There appears to be a cement change in the upper unit that occurs at about 126 feet below the top of the unit. Above this depth the rock is poorly indurated, weakly cemented with carbonate, and locally moist, with fractures either open or filled with carbonate. Below this depth, the rock is typically well cemented, hard, and dry, with all fractures

filled with gypsum. The top of the Dewey Lake at the WIPP site is located approximately 60 feet below ground surface.

No water table or zones of saturation in the Dewey Lake have been identified in holes drilled in the central and northern portion of the WIPP site, although "moist" cuttings have been logged in some holes drilled using compressed air as a circulation. Water was detected in the Dewey Lake in holes drilled near the southern WIPP boundary. Video logging of WQSP 6A has shown the water to be associated with open fractures at the base of the Dewey Lake.

Describe or provide reference for the hydrology of your site.

The Culebra dips about 70 feet/mile to the east-southeast. Five miles west, in Nash Draw, the Rustler Formation is exposed at the surface. Where the Rustler is exposed, or near the surface, the permeability of the Culebra is enhanced as a result of dissolution of halite above and below. For example, at well H-7, approximately 7 miles southwest of the WIPP site near Nash Draw, the top of the Culebra is about 215 feet below the surface, and transmissivity is greater than 1.1×10^{-3} m^2/s. However at well P-18, located 3 miles southeast of WIPP, the top of the Culebra is about 908 feet below the surface, and the transmissivity is less than 4.1×10^{-9} m^2/s. Within the WIPP site boundary, the transmissivity values are less than 7.4×10^{-5} m^2/s.

The transmissivity of the saturated fractured zone within the upper Dewey Lake redbeds at well WQSP 6A is estimated at 1.3×10^{-3} m^2/s. This well is located about 0.44 miles southwest of the WIPP disposal panels. The zone of saturation appears to extend south of WQSP-6A, but is discontinuous to the northeast, above the disposal panels.

<u>Attachment 6</u> consists of a schematic stratigraphic column for the WIPP area and Figures 6.1 and 6.2 from DOE/WIPP 00-2225.

22. *What emergency response and medical services and facilities are there at the site and nearby?*

Emergency Response Services:

The WIPP maintains an Emergency Management Program in Accordance with Department of Energy (DOE) Order 151.1A, *Comprehensive Emergency Management*

The WIPP maintains an Emergency Operations Center on Site and an Alternate EOC at the State of New Mexico Living Dessert Zoo and Botanical Gardens (Carlsbad, NM)

The WIPP is part of the Department of Energy Albuquerque Operations Office (DOE/AL) and as such has the availability of DOE/AL resources.

The WIPP maintains a Fire Brigade in accordance with National Fire Protection Association Standard 600, *Standard on Industrial Fire Brigades*.

The WIPP maintains a 24-hour Central Monitoring Room for initiating emergency response (fire, radiological or medical events, etc.), for tracking of and communication with WIPP shipments, for monitoring of current and forecast meteorological conditions, and for monitoring facility-operating parameters.

The WIPP maintains a Drill and Exercise program in accordance with DOE O. 151.1A.

The WIPP maintains the following emergency support groups:

I. Fire Brigade - is trained to respond to and direct all emergency operations dealing with life and property. Response capabilities include fire response, medical, hazardous material/waste, radiologically contaminated patients, and rescue.
II. Security Fire Support- consists of assigned members from the security organization to make up two members of the WIPP Site Fire Brigade.
III. Radiological Assistance Team (Part of DOE/AL Region 4 RAP Team) - A team of people and equipment for responding to radiological emergencies.
IV. Incident/Accident Response Team - the purpose of the team is to provide technical guidance to the DOE-Carlsbad Field Office

(CBFO) and the DOE/AL in the event of a transportation incident/accident.

V. Operations Assistance Team (OAT)- The OAT is composed of Operations Department managers and other personnel with the technical expertise and experience necessary to carry out the mission of assisting during emergency situations.

VI. Radiological Control - Upon notification of a potential for a radiological release, or when unexpected radiological conditions are encountered, the Radiological Control section is responsible for site radiological monitoring and assessment activities. This organization provides guidance for the evaluation of radiological incidents and assists with the implementation of corrective actions.

VII. Emergency Response Team (ERT) - A team of employees from the various sections/departments that leave their normal jobs and respond to emergencies (Fire, Medical, Hazardous Materials, radiological incidents, etc.)

VIII. First Line Initial Response Team (FLIRT) - Same as ERT except their normal job duties are in the underground.

IX. Mine Rescue Teams (MRT) - The MRT are responsible for underground re-entry and rescue after an underground evacuation. The MRT receives training in breathing apparatus, barricading, first aid, gas detection, search and recovery, ventilation, fire suppression, and mine mapping.

The WIPP maintains the following off-site interfaces:

I. Mutual Aid Firefighting, Law enforcement, Emergency Medical Services, Hazardous Material Response Agreement between the City of Carlsbad and the DOE.

II. Mutual Aid Firefighting, Law enforcement, Emergency Medical Services, Hazardous Material Response Agreement between the City of Hobbs and the DOE.

III. Mutual Aid Fire Fighting Agreement between the Eddy County Commission and the DOE.

IV. Interagency Agreement Between the US Bureau of Land Management and the DOE and the US National Park Service and the US Forest Service for Assistance in Search and Rescue Missions and Training.

V. Joint Powers Agreement between the DOE and the City of Carlsbad and the County of Eddy and New Mexico Energy, Minerals, and Natural Resources Department for a Joint Use Alternate EOC.

VI. Emergency Radiological Treatment Center for the WIPP between the DOE and Carlsbad Medical Center.

VII. Emergency Radiological Treatment Center for the WIPP between the DOE and Lea Regional Medical Center.
VIII. Federal Bureau of Investigation/DOE Memorandum of Understanding.
IX. Mine Rescue Agreement between IMC Kalium, Mississippi Potash, and the DOE.
X. Memorandum of Understanding between the DOE CBFO and the Sheriff of Eddy County concerning External Law Enforcement Support.
XI. Memorandum of Understanding between the DOE CBFO and the Sheriff of Lea County concerning External Law Enforcement Support.
XII. Memorandum of Understanding between the DOE and the US Department of Interior.
XIII. Interagency Agreement between the DOE and the United States Department of Defense for the Temporary Parking of Transuranic Waste Shipments at Military Institutions.

The WIPP maintains a Joint Information Center in accordance with DOE O. 151.1A.

Emergency Response Equipment:

I. Ambulance - registered as a Basic Life Support Medical Rescue Unit
II. Underground Ambulance
III. Surface Rescue Truck - that carries both light - and heavy-duty rescue equipment
IV. Underground Rescue vehicle that carries extrication equipment and air packs.
V. Surface Structure Truck - 1500 G.P.M. Class A Structural Fire Truck
VI. Surface Structure/Wildland Interface Truck – 750 G.P.M. Class A Pumper designed to fight both structural and Wildland fires.
VII. Wildland Brush Truck
VIII. Hazardous Material Response Trailer
IX. Mobile Decontamination Trailer

The WIPP maintains Communication Equipment for both on-site and off-site communications equipment.

The WIPP maintains a First Aid Room equipped for stabilization of cardiac and trauma patients and administration of minor first aid.

<u>Medical Services</u>

Medical Services for all employees at the WIPP Project are provided at the site in the Occupational Health Services clinic, located in the Safety Building. Satellite clinics are also operated in the Skeen Whitlock Building in Carlsbad and in the underground mine at the project. All clinics are fully equipped to meet emergency and routine medical needs. Clinics are fully licensed by the New Mexico Board of Pharmacy. Equipment available at the site includes defibrillation and external cardiac pacing units, pulse oximeters, endotracheal intubation equipment and major trauma first aid equipment. The clinics are staffed with three Registered Nurses, a medical secretary and a wellness coordinator. The clinic is open weekdays on day shifts at the site. A qualified contract occupational health physician is located in Carlsbad, NM. Emergency Rooms are located at Carlsbad Medical Center, Carlsbad, NM and at Lea Regional Hospital, Hobbs, NM. Emergency Services provides 24 hour on-site and area coverage for medical, trauma, fire and hazardous material emergencies. WIPP has a full state licensed ambulance service with qualified Emergency Medical Technicians, called Emergency Services Technicians (EST's) available at all times. Critically injured patients may be taken directly to regional trauma centers by AeroCare air ambulance services. A 20 member volunteer Emergency Response Team is trained to provide back up to the EST's and RN's as needed. Two fully qualified Mine Rescue Teams are also available. All emergency providers train monthly to maintain skill levels.

RN qualifications and certifications are:

- **All RNs are Advanced Cardiac Life Support certified**
- **Two RNs will complete certification as Trauma Nurse Specialists in May, 2001**
- **One RN is an Emergency Medical Technician**
- **One RN is a nationally board Certified Occupational Health Nurse Specialist (COHN-S)**
- **All RNs are Certified Hearing Conservation Technicians**
- **All RNs are certified to perform pulmonary function testing**
- **All RNs and the wellness coordinator are Certified Breath Alcohol Technicians**
- **One RN has practiced for over 30 years in all areas of hospital based nursing, one RN has 20 years of experience in acute care (OB, ICU and ER) and occupational health and one RN has 5 years of ICU experience.**
- **All RNs are Radiation Worker I or II qualified and Hazardous Material Responder training is in progress.**
- **All nurses are underground qualified.**

Services available at the WIPP site clinic include:

- **Emergency medical care, including pre-hospital cardiac, medical and trauma management**
- **First aid and follow up**
- **Workers Compensation management and case management for injured employees**
- **Job related qualification physical examinations, including TB testing, spirometry and hearing testing**
- **Vaccinations, including influenza, Hepatitis A and B, rabies, and tetanus/diptheria as requested/required**
- **Cholesterol/Lipid Profile testing, blood sugar testing, glycosolated hemoglobin testing, urinalysis and blood draws for required lab testing**
- **In-house monitored exercise and diet programs for high risk employees**
- **Electronic body fat analysis and counseling**
- **Critical Incident Stress management**
- **Stress management education**
- **Site specific or tailored wellness education for groups or departments**
- **Clinic based wellness counseling and education to employees**
- **Scheduling and referral to medical care**
- **Community outreach programs**
- **Comprehensive substance abuse program, including drug and alcohol testing, Employee Assistance Program and related education.**

23. *Please provide a map that depicts population density and distribution within the low population zone surrounding any exclusion areas. How close to your site is the nearest settlement exceeding 25,000 population?*

The nearest settlement with a population in excess of 25,000 is Carlsbad, NM, 26 miles west of the WIPP.

<u>Attachment 7</u> consists of the cover and Figures 4-1, 4-11, and 4-2 from the WIPP Disposal Phase Final Supplemental EIS, Vol. I (DOE/EIS-0026-S-2). The figures depict land use, minority population, and low-income population within 50 miles of the WIPP.

24. *How far away is the nearest town? What is its population? What kind of suppliers, services, and labor pool are available within a one-hour commuting radius of your site?*

The nearest community is the village of Loving, NM, with a population of about 1,300. It is located 18 miles west-southwest of the WIPP. Carlsbad, NM, with a population of about 25,000, is about 26 miles west of the site.

See also the answer to question 28.

25. Is there institutional support for additional nuclear activities at your site? Explain in detail. Provide institutional and strategic plans and/or similar references.

The New Mexico congressional delegation and state legislators for Southeastern New Mexico support the expansion of scientific opportunities at the WIPP as an additional return on the taxpayers' investment in the project. The WIPP already provides a safe, cost-effective facility with appropriate infrastructure for scientific experiments. An increase in nuclear activities would provide not only an economic boost to the region, but also would place WIPP in a prestigious position in the nuclear industry.

U.S. Senator Pete Domenici and U.S. Representative Joe Skeen have publicly expressed their commitment to expanding the scope of WIPP to include experimental facilities.

WIPP has also developed relationships with the Western Governors' Association and the Southern States Energy Board. By opening the lines of communication, WIPP has created an environment whereby the organizations serve as sounding boards for DOE. Their input has played a key role in bringing about safety improvements and a positive public perception of WIPP.

Mayor Gary Perkowski and the community leaders of Carlsbad support the expansion of the city's scientific community. In addition to DOE and Westinghouse TRU Solutions LLC, the presence of Sandia National Laboratories, Los Alamos National Laboratory and the Carlsbad Environmental Monitoring and Research Center has contributed to a community sentiment supportive of scientific experimentation and nuclear activity.

There are two institutions of higher learning in Carlsbad, both of which provide education applicable in the nuclear industry. College of the Southwest recently collaborated with DOE and Westinghouse to create a new degree in environmental management. The program, available at the Hobbs and Carlsbad campuses, uses the opportunities available through WIPP to educate future scientists and create a knowledgeable workforce in Southeastern New Mexico. The expansion of nuclear activities at WIPP would open the door for educational opportunities in areas such as nuclear engineering. New Mexico State University (NMSU) also has a campus in Carlsbad. NMSU plays a key role in providing regional education to improve the skills of workers. For example, NMSU developed a program to

increase the capabilities of manufacturing workers so they could fabricate products that support the handling and transport of nuclear materials.

26. *Will there be general public and worker acceptance or support of additional nuclear activities at your site?*

The general public in Southeastern New Mexico would welcome the economic advantages of additional research activities in the vicinity of WIPP. WIPP has been, and continues to be a source of jobs and opportunity for small and minority owned businesses. The people and contractors associated with WIPP have a history of community involvement that enhances the quality of life of everyone in the region.

Because WIPP has been an integral part of the community for more than 20 years, the public is already educated about and accepting of nuclear activities in the region. In fact, the community of Carlsbad invited the federal government to the area in the 1970s to establish the WIPP project. WIPP's outstanding safety record boosts the public's confidence in DOE's ability to handle nuclear materials in an environmentally responsible manner. In particular, the transmutation portion of the project appeals to the public's appreciation and understanding of WIPP as an environmentally sound solution to the national problem of nuclear waste disposal.

We have the infrastructure to educate the public in other parts of New Mexico about the health and safety issues associated with nuclear projects. We know our outreach efforts work. University of New Mexico public opinion polls from 1995 to 2000 show a 22 percent shift to a majority public support (from 48 percent to 70 percent) for WIPP operations.

WIPP employees would also be receptive to additional nuclear activities in the area. In addition to the advantages cited for the general public, additional nuclear activities would lead to expanded educational and advancement opportunities in the region.

27. *Describe any Federal, state, local or tribal environmental laws, regulations, and agreements or pending actions that may be advantageous or impede locating additional nuclear activities at your site.*

See the WIPP Land Management Plan (DOE/WIPP 93-004) (e.g., protected species nesting areas). In addition, the following should be discussed during project planning phases:

- **A Land Management Council will be convened with all affected stakeholders (e.g., ranchers, sportsman's groups, Mescalero Apache tribe, personnel from the oil and gas industry, BLM, SLO, SHPO, etc.).**
- **The Land Management Plan will have to be revised and submitted to the Land Management Council and, ultimately, Congress.**
- **Public hearings will have to convened.**
- **EIS/EA determination.**

There are numerous environmental laws that apply to the WIPP site. These are documented, along with WIPP's compliance, in the Biennial Environmental Compliance Report, issued in October of each even-numbered year. Most of these deal with land use (grazing, wildlife protection, etc.) and are not particularly problematic. Modifications to existing compliance plans, permits and the like may be needed; however, the framework for obtaining such authorizations is in place.

Five items require special mention.

<u>First</u> and foremost, the WIPP Land Withdrawal Act (PL 102-579) limits the use of the withdrawn area to the purposes of WIPP as follows:

> **Section 3 (a) (3) states the following**
>
> ***RESERVATION: Such lands are reserved for the use of the Secretary for the construction, experimentation, operation, repair and maintenance, disposal, shutdown, monitoring, decommissioning, and other authorized activities associated with the purposes of WIPP as set forth in section 213 of the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Pub. L. 96-164; 93 Stat. 1259, 1265), and this Act.***

The purposes of WIPP as stated in section 213 of the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Pub. L. 96-164; 93 Stat. 1259, 1265) are as follows:

> ***the Secretary of Energy shall proceed …Waste Isolation Pilot Plant is authorized as a defense activity for the Department of Energy, … for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from the defense activities and programs …***

Therefore, the activity would have to be determined to have a tie to the mission for the WIPP.

<u>Second</u>, in addition to the reservation in section 3(a)(3) of the WIPP Land Withdrawal Act (PL 102-579)(the WIPP LWA), section 4(a) of the WIPP LWA gives general management authority of the withdrawal area to the Secretary of Energy. Part of that authority allows "such non-WIPP related uses as the Secretary determines to be appropriate." (WIPP LWA section 4(b)(3)). Although the examples in section 4(b)(3) include grazing, hunting and trapping, the WIPP LWA does not limit the acceptable non-WIPP related uses to those examples. Non-WIPP uses are "subject to such conditions and restrictions as may be necessary to permit the conduct of WIPP-related activities." (WIPP LWA section 4(b)(2). Consequently, the Secretary of Energy has the authority to allow non-WIPP related activities in the withdrawal area.

<u>Third</u>, both the certification issued by the EPA and the Hazardous Waste Facility Permit issued by the New Mexico Environment Department with regard to the closure and post-closure of the WIPP do not anticipate alternative uses of the Land. Both documents require that the land be restored to as near its original condition as feasible as part of final closure. These are as follows:

> **Hazardous Waste Facility Permit, Section I-1e(2)(f) <u>Final Contouring and Revegetation</u> states:**
>
> ***In the preparation of its Final Environmental Impact Statement (DOE, 1980), the DOE committed to restore the site to as near to its original condition as is practicable. This involves removal of access roads, unneeded utilities, fences, and any other structures built by the DOE to support WIPP operations. Provisions would be left for active post-closure controls of the site***

and for the installation of long-term markers and monuments for the purpose of permanently marking the location of the repository and waste. Permit Attachment J-1a(1) discusses the active and long-term controls proposed for the WIPP. Installation of borehole seals are anticipated to take twelve (12) months, shaft seals fifty-two (52) months, and final surface contouring eight (8) months.

Section 7.1.2 of the Compliance Certification Application states:

In order to design an active controls program around these four objectives, the DOE has assumed the following:

- ***Site restoration will be to as near the original condition as practicable.***

<u>Fourth</u>, the Consultation and Cooperation Agreement between the DOE and the State of New Mexico provide for change in mission in Article VI.

<u>Fifth</u>, the WIPP National Environmental Policy Act (NEPA) documentation does not consider alternative uses of WIPP other than those that are traditional (hunting, trapping, grazing, recreational use).

28. Please provide other information relevant to our analysis of your site. These can be other factors that influence project costs, schedules, and risks.

- ***Unique regional support*—unlike most regions in the county, Southeastern New Mexico (Eddy and Lea Counties) strongly supports the DOE and its nuclear programs. Civic leaders traveled to Washington, DC, on numerous occasions to lobby for the siting and opening of WIPP. Public opinion surveys indicate that the vast majority of citizens and businesses in region believe that WIPP is good for the nation, state, and region. Many regional small businesses have had stickers reading "Another Business for WIPP" in their windows.**

  What does this mean in terms of siting, constructing, and operating the AAA facility at WIPP? Avoidance of the tremendous delays and expenses that the DOE and commercial nuclear utilities have experienced directly because of local opposition to the construction and operation of nuclear facilities, such as Yucca Mountain.

- ***Competitive labor rates*—Construction of this type of facility will require a mix of semi-skilled and skilled personnel. The national hourly wage is $13.89. In Eddy County, the average hourly wage is $8.70.**

- ***Manufacturing/construction support available*—Carlsbad is home to nuclear waste container, heavy-duty gear, and machining manufacturers, as well as construction and maintenance companies used to working to nuclear standards.**

- ***Opportunity to support federal initiatives in economically disadvantaged areas*— For years the federal government has worked to provide opportunities in economically disadvantaged and depressed regions. Southeast New Mexico is such a region. With the decline of the potash and ranching industries, the regional economy has experienced a long, pronounced economic downturn. The national unemployment hovers around 3.9%. The unemployment rates in Los Alamos and Bernalillo Counties are 2.7% and 4.5% respectively. In contrast, the unemployment rate in Eddy County is 9.2% and 6.6% in Lea County. The per capita income (PCI) in Eddy County is $19,500 and $18,700 in Lea County. The PCI in Los Alamos County is $38,400, and $26,400 in Bernalillo County.**

- ***Opportunity to support federal diversity initiatives*—The DOE has worked hard to support federal diversity initiatives. Southeast New Mexico is a diverse region with a Hispanic population of over 34,000, Black population of 4,500, and a Native American population of 800. The minority population is 31% of the total regional population.**

- ***Training/Educational infrastructure in place*—Eddy County is home to New Mexico State University-Carlsbad, College of the Southwest-Carlsbad, the Technology and Training Center (Carlsbad), the Carlsbad Environmental Monitoring and Research Center, the Advanced Manufacturing & Innovation Training Center (Carlsbad), and the Federal Law Enforcement Training Center (Artesia). Lea County is home to College of the Southwest-Hobbs and New Mexico Junior College. Together, these institutions and facilities have helped provide the WIPP with a trained and skilled workforce in a broad range of fields, including health physics, environmental management, waste handling, and advanced welding.**

- ***Remote location*—The WIPP's remote location minimizes any risks to the public and environment. The city closest to the WIPP is Carlsbad, located 26 miles to the northwest of the site. The closest metropolitan areas are 150-200 miles away (El Paso, Lubbock, Midland).**

- ***Favorable energy cost*---The cost of electricity per kWh is low. The regional abundance of natural gas may somewhat compensate for the relative scarcity and cost of cooling water.**

In summary, the key advantages of locating the facility at the WIPP site are:

- **Vast open lands**
- **Abundant and reliable electricity supplies**
- **Existing mission devoted to radioactive waste management**
- **Informed and receptive local and regional community**